period, compared to other measurement; condyle (170%), coronoid (157%), body (130%), symphysis (128%) respectively. The height of condyle increased 161%, and coronoid and anterior alveolar area showed 151–140% increase in height respectively. In anterior posterior length, condyle, coronoid, gonion from anterior alveolar bone showed similar increase of 143–138%. The width of angular process (Go-Go) increased 135%, however, width of condylar process (Con-Con) increased 110%. By the superimposition of the models, we could observe this growth pattern that the mandible grew radially, and the width of lower border of ramus was widen.
Conclusions: We analysed the growth pattern of mandible in SD rat visually through the image superimposition in three dimensions and calculated the growth ratio of each part of mandible according to the time periods.

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Biomechanical evaluation of different plates osteosyntheses, for fixing sagittal split osteotomy in major mandibular advancements, with or without counterclockwise rotation

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Objective: The aim of this study was to assess the biomechanical stability of six different osteosynthesis, in major advancements after sagittal split osteotomy, simulating the masticatory forces by a three-point biomechanical test.
Methods: 60 polyurethane hemimandibles were assigned to two groups, containing six subdivisions each ($n = 5$). After 10 mm advancement of the distal segment (group 1) and 10 mm advancement combined with 20 degrees counterclockwise rotation (group 2), the bone segments were fixed by different osteosynthesis methods using 2.0 mm miniplates/screws: Subdivision A, one conventional straight miniplate; Subdivision B, two conventional straight miniplate; Subdivision C, one conventional sagittal miniplate; Subdivision D, one locking straight miniplate; Subdivision E, two locking straight miniplate; Subdivision F, one locking sagittal miniplate. The hemimandibles were loaded in compressive strength until 3 mm displacement occurred between segments vertically or horizontally.
Findings: In all cases, the fixations showed better performance in group 1 against group 2, with statistic signification in subdivions A,C,D. The use of 2 straight miniplates shows more resistant, followed by sagittal miniplates in both groups. However, in counterclockwise rotations, the use of two straight miniplates of conventional system showed no statistical significance against sagittal locking plate.
Conclusions: Two miniplates still remain as a form of fixation with less displacement. If surgeon opts to use only one miniplate, the sagittal miniplate must be preferred.

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Evaluation of obstructive sleep apnoea using peripheral arterial tonometry during perioperative period after removal of impacted third molar with dentofacial deformity in general anaesthesia

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Background: It is necessary to be careful for airway obstruction during perioperative period after oral and maxillofacial surgery with general anaesthesia.
Objectives: The purpose of this study is to evaluate obstructive sleep apnoea after removal of impacted third molar with dentofacial deformity in general anaesthesia.
Methods: Subjects in this study comprised of 8 patients (3 males, 5 females) with dentofacial deformity and impacted third molar. The mean age at surgery was 24 years (range, 15–44 years). Mean body mass index was 21.8 kg/m^2 (18.3–33.4). They were examined by polysomnography before orthognathic treatment. Respiratory disturbance index (RDI), apnoea–hypopnoea index (AHI), oxygen desaturation index (ODI), sleep state were measured using peripheral arterial tonometry over the night during 2 nights after surgery in general anaesthesia. These factors were compared between before and after surgery.
Findings: pAHI was increased in all patients at the day after surgery (T0) and one day after surgery (T1) together rather than before surgery. Five patients in pAHI, four patients in pRDI, four patients in ODI of T1 were increased rather than these of T0. Mean lowest SPO2 at T0 was 92.4% (90–97) and at T1 was 88.4% (73–95). Lowest SPO2 was under 80% in two patients at T1. Rapid eye movement (REM) sleep at T0 was 18.5% (0–40.9) and at T1 was 23.3% (3.7–38.8).
Conclusion: Worsening of respiratory condition and change of REM sleep periods were found after surgery.

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Adjunctive procedures in orthognathic surgery to enhance facial aesthetics

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Background: The main goal of orthognathic surgery is to correct dentofacial deformities and to restore occlusion. As the result of orthognathic patients should have a normal jaws function and improved facial aesthetics. Both high aesthetic expectations and correct occlusion have made orthognathic surgery a demanding procedure. This makes adjunctive simultaneous surgery a great need in these patients. We present our experience in performing different simultaneous adjunctive procedures with orthognathic surgery.
Methods: 135 patients who underwent simultaneous operation during the period of 2012–2016. Three-dimensional and conventional planning was performed for all patients to achieve correct position of jaws and good aesthetic projection of soft tissues. Ancillary procedures were planned simultaneously and were performed after jaws reposition. Orthognathic surgery was

combined with chin osteotomy (40%), rhinoplasty (20%), bilateral or unilateral zygoma osteotomy (20%), facial fat grafting (35%), submental liposuction (60%). All the patients expressed satisfaction with their postoperative results.
Conclusion: Patients, especially women, not only ask for good functional results, but also seek to obtain a good aesthetic facial outcome. Performing simultaneous operation allows us to solve jaw and facial aesthetic problems of the patients in one procedure. Advantages include one-time recovery, one general anaesthesia, economic benefits, good functional and aesthetic outcome.

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A comparison study between computer-aided design/computer-aided manufacturing surgical splints obtained by three-dimensional software 'TIMEUS' and two-dimensional surgical splints used in orthognathic surgery

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Objectives: In this study we compare the use of computer-aided design/computer-aided manufacturing (CAD/CAM) surgical splints designed by a three-dimensional (3D) software called TIMEUS and two-dimensional surgical splints made in the conventional articulator, in patients with facial deformities that underwent orthognathic surgery.
Methods: We selected 30 patients in a period of two years, between 2014 and 2015. We made a cone-beam computed tomography (CBCT) prior to the surgery and 6 months later. The type of splint and other data were recorded.
Results: The 3D software obtains the patient's images from the CBCT and serves as a matrix in which the surgical splints are made. We found that the use of this type of splints shortens the time of surgery and give us more accuracy in the osteotomies and movements made.
Conclusions: We recommend the use of 3D software and CAD/CAM surgical splints in this type of surgery, as they have demonstrated in our experience the good outcomes achieved.

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Contemporary orthognathic preparation for the orthognathic surgery: do we have to need the surgical wire for 4 weeks before the surgery?

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Background: In orthognathic surgery, traditionally, we know that the stability wire need to be prepared in at least 4 weeks before surgery, so does passive state of stability wire when the impression for surgical splint taken (generally, 1–2 weeks before surgery). Otherwise, recently, two-jaw surgery with minimal orthodontics or before the orthodontics is preferred. Even, two-jaw surgery without orthodontics is reported.
Objectives: We do a study about the clinical needs of the surgical wire for 4 weeks before the surgery and how it affects the postoperative stability.
Methods: We compared the surgical wire for 4 weeks before the surgery with other groups, which were cases with rectangular wire, nickel titanium and none (does not proceed orthodontics). We studied about 174 patients who underwent two-jaw surgery for correction of class III malocclusion at the Department of Oral and Maxillofacial Surgery, Pusan National Univ. Dental Hospital between November 2013 and July 2015. We compared two cephalograms between postoperative and 6–12 months after surgery about FH-palatal, FH-occlusal, FMA, SNA, SNB and so on in the lateral cephalograms.
Findings: Any groups do not have significant difference than other groups.
Conclusion: Four weeks period for stability does not offer a better result, we could drop the stability period which increase the treatment period and needless surgical wire-making course.

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Nine years follow-up after double-jaw surgery for skeletal class III malocclusion correction: a case report

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Background: Orthognathic surgery may be indicated to one-fourth Class III malocclusion patients at the completion of active growth. However, it presents some limitations due to the possibility of incomplete surgical success or of postsurgical relapse.
Objectives: This paper aims to present a nine years follow-up of a skeletal Class III 17-year-old male patient with midface deficiency, mandibular excess and face asymmetry who underwent double-jaw surgery with a maxillary advancement and mandibular repositioning.
Methods: The treatment initiated with presurgical orthodontic alignment and further LeFort I advancement and mandibular repositioning to correct mandibular asymmetry. Patient was followed through nine years, and facial, occlusal and cephalometric relationships were accessed.
Results: Facial and occlusal relationships were improved. Maxilla moved forward and mandible was repositioned. Intraorally, negative over jet was corrected and Class I occlusal relationship was achieved. The nine years follow-up showed the maintenance of facial and occlusal balance, agreeing with ANB angle values, pre (−4.6), post (1.99) and nine years after orthognathic surgery (2.5).
Conclusion: Double-jaw surgery seems to be a stable procedure to correct Class III skeletal malocclusions. However, some factors such as the amount of advancement and type of fixation appears to influence negatively the stability.

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